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10/802,984	03/17/2004	Donald R. Van Der Moere	D5270	3898

30409 7590 06/21/2007
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/802,984
Filing Date: March 17, 2004
Appellant(s): VAN DER MOERE ET AL.

MAILED

JUN 2 1 2007

GROUP 3600

Elias P. Soupos
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed February 27, 2007 appealing from the Office action mailed July 27, 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

WITHDRAWN REJECTIONS

The following ground of rejection is not presented for review on appeal because it has been withdrawn by the examiner. The rejection of claims 8 and 10-14 under 35 U.S.C. 112, second paragraph has been withdrawn.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,851,659	KOMURO et al.	12-1998
1,491,155	McKONE	4-1924
4,406,558	KOCHENDORFER et al.	9-1983
5,601,293	FUKUTOME et al.	2-1997
3,757,378	WAKEFIELD	9-1973

(9) Grounds of Rejection

The following grounds of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

Claims 1, 3, 4, 6, and 7, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Komuro et al., 5,851,659.

Regarding claim 1, Komuro et al. disclose, in Figure 3, a piston pin comprising a piston pin exterior margin **13** coated with a chromium-nitride (Cr-N) coating (col. 7, lines 47-50). Appellants should note that the exterior margin is able to shiftably mate with an inside margin of a pin bore of an appropriately sized connecting rod without employing an intervening bushing.

Regarding claim 3, appellants are reminded that it is the patentability of the product, not recited process steps, that is to be determined irrespective of whether only process steps are recited. Accordingly, how the Cr-N coating is deposited, e.g., by

physical vapor deposition, is of little consequence when Komuro et al. possess such coating. Therefore, this limitation has been given limited patentable weight. See MPEP 2113.

Regarding claim 4, the chromium-nitride coating was deposited to a depth of between 1 and 10 microns (col. 2, line 40).

Regarding claim 6, the coating is buffed. Appellants should note that the roller fatigue test apparatus inherently buffs the material until the coating peels off.

Regarding claim 7, the coating is buffed. Appellants are reminded that it is the patentability of the product, not recited process steps, that is to be determined irrespective of whether process steps are recited. Accordingly, how the coating is buffed, e.g., in a centerless buffing operation, is of little consequence when Komuro et al. possess such buffed coating. Therefore, this limitation has been given limited patentable weight. See MPEP 2113.

Claim Rejections - 35 USC § 103

Claim 5 is rejected under 35 U.S.C. 103(b) as being anticipated by Komuro et al., 5,851,659.

Regarding claim 5, Komuro et al. disclose the chromium-nitride coating deposited to a depth of a range of 1-80 microns (co. 2, line 40). However, Komuro et al. do not disclose “substantially 5 microns”. Appellants should note, that in a design consideration, one skilled in the art will choose a depth of 5 microns thus reading on “substantially 5 microns”. Therefore, as taught by Komuro et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to choose a depth of substantially 5 microns as part of a design consideration.

Claims 8, 10, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKone, 1,491,155, in view of Kochendorfer et al., 4,406,558.

Regarding claim 8, McKone discloses, in Figure 6, a combination of a piston pin **17** and a connecting rod **18**. The piston pin **17** has a piston pin exterior margin. The pin bore and the piston pin are mating. The mating is a shiftable surface-to-surface engagement without employing an intervening bushing. Note that Figure 1 in McKone uses a busing and Figure 6 does not use a bushing.

However, McKone fails to disclose the exterior margin having a coating being comprised of chromium-nitride. Kochendorfer et al. teach coating the exterior margin of a piston pin with a hard nitride of the metals in the third to six group of the periodic table (see attachment) to produce a sliding bearing layer (col. 2, lines 45-50). Appellants should note that Chromium (Cr) is in the sixth group of the periodic table (see

attachment) and a hard nitride of the sixth group renders chromium-nitride, which falls within the scope of the description to make a layer. Therefore, as taught by Kochendorfer et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the piston pin of McKone with a coating of chromium-nitride to provide a sliding bearing layer. Given the modification, the coating will be a chromium-nitride coating disposed on the tubular body.

Regarding claim 10, appellants are reminded that it is the patentability of the product, not recited process steps, that is to be determined irrespective of whether only process steps are recited. Accordingly, how the Cr-N coating is deposited, e.g., by physical vapor deposition, is of little consequence when McKone as modified by Kochendorfer et al. possesses such coating. Therefore, this limitation has been given limited patentable weight. See MPEP 2113.

Regarding claim 15, McKone discloses, in Figure 6, a method comprising:

forming a piston pin body **17** having an exterior margin;

forming an inside surface margin of a connecting rod **18** of a certain material, including the surface of a pin bore; and,

mating the exterior margin of the tubular body **17** with the inside surface margin of the pin bore in a shiftable inside surface-to-surface engagement without employing an intervening bushing. However, McKone fails to coat the exterior margin with a chromium-nitride material.

Kochendorfer et al. teach coating the exterior margin of a piston pin with a hard nitride of the metals in the third to six group of the periodic table to produce a sliding bearing layer (col. 2, lines 45-50). Appellants should note that Chromium (Cr) is in the sixth group of the periodic table and chromium-nitride falls within the description as a layer. Therefore, as taught by Kochendorfer et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the exterior margin of McKone with a coating of chromium-nitride to provide a sliding bearing layer.

Claims 10-12 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKone, 1,491,155, in view of Kochendorfer et al., 4,406,558, as applied to claims 8-10, 15, and 16, and further in view of Komuro et al., 5,851,659.

Regarding claims 10 and 17, McKone as modified by Kochendorfer e al., fail to deposit the chromium-nitride coating by physical vapor deposition. Komuro et al. teach depositing chromium-nitride coating through physical vapor deposition as an ion plating process to provide resistance to peeling, abrasion and baking (see Abstract). Therefore, as taught by Komuro et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to deposit the chromium-nitride coating by physical vapor deposition to provide resistance to peeling, abrasion, and baking.

Regarding claims 11 and 18, McKone as modified by Kochendorfer e al., fail to disclose to deposit the chromium-nitride coating to a depth of between 1 and 10 microns. Komuro et al. teach a chromium-nitride coating deposited to a depth of between 1 and 80 microns (col. 2, line 40) as part of a design consideration of a sliding surface. The range of 1 and 10 microns falls within this disclosed range. Therefore, as taught by Komuro et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to deposit the chromium-nitride coating to a depth of between 1 and 10 microns as determined through routine experimentation and optimization.

Regarding claims 12 and 19, McKone, as modified by Kochendorfer et al. and Komuro et al., disclose the chromium-nitride coating deposited to a depth of a range of 1-80 microns (co. 2, line 40). However, Komuro et al. does not disclose "substantially 5 microns". Appellants should note, that in a design consideration, one skilled in the art will choose a depth of 5 microns thus reading on "substantially 5 microns". Therefore, as taught by Komuro et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to choose a depth of substantially 5 microns as part of a design consideration.

Claims 13 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKone, 1,491,155, in view of Kochendorfer et al., 4,406,558, and Komuro et al.,

5,851,659, as applied to claims 10-12 and 17-19, and further in view of Fukutome et al., 5,601,293.

Regarding claims 13 and 20, McKone, as modified above, fails to disclose buffing the chromium-nitride after deposition. Fukutome et al. suggest treating surface roughness by buff-polishing a surface to resist wear (col. 7, line 18-21). Further, one skilled in the art knows that polishing reduces surface roughness in moving parts, as taught by Fukutome et al.. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to buff the chromium-nitride after deposition to treat the surface roughness to resist wear.

Claims 14 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKone, 1,491,155, in view of Kochendorfer et al., 4,406,558, Komuro et al., 5,851,659, and Fukutome et al., 5,601,293, as applied to claims 13 and 20 above, and further in view of Wakefield, 3,757,378.

Regarding claim 21, as modified above, Fukutome et al. fail to disclose the buffing operation used. Wakefield teaches a centerless buffing operation to polish components. Therefore, as taught by Wakefield, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a centerless buffing operation to buff the coating of chromium-nitride.

(10) Response to Argument

Claims 1, 3, 4, 6, and 7

Appellants argue that feature 13 of Komuro et al. is not a piston "that is shiftably matable with an inside margin on a pin bore of a connecting rod without the employment of an intervening bushing. In response, it should be noted that this limitation does not impart any structure but rather recites the intended purpose of the coating. Accordingly, the same coating being recited is capable of performing as claimed. There's nothing in the piston pin of Komuro et al. that would prevent such function. Appellants further argue that feature 13 is a test piece attached to a test roller and is not considered a piston pin. The examiner disagrees since claim 1 is directed to the pin 10 as shown in appellants' Figure 4, which is similar to feature 13 shown in Komuro et al.

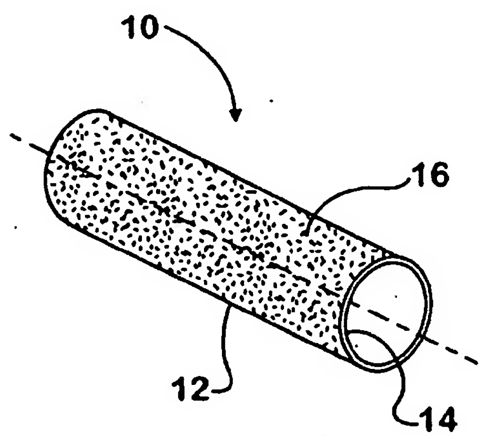
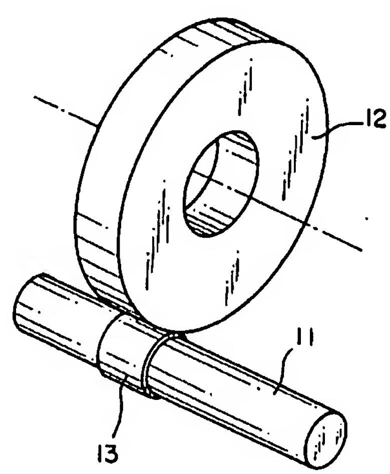


FIG. 4

Appellant's invention.

F I G. 3



Komuro et al. showing the pin on a roller.

Appellants further argue that Komuro does not imply a piston pin or any similar structure. In response, the appellant have not pointed out from the claims what structural features of the so-called "piston pin" does Komuro et al. fail to meet. Note that both figures shown above show a cylindrical tube and both have a coating of chromium-nitride thus the so the tester 13 is a piston pin as claimed.

Claim 5

Appellants argue that since Komuro et al. do not teach independent claim 1, then the teachings of Komuro et al. do not anticipate nor make obvious the claimed combination of claim 5 since the teachings do not yield a piston pin. The examiner disagrees and directs the Board to the arguments previously made against claim 1.

Claims 8, 10, and 15

Appellants argue that McKone teaches in Figure 1 a connecting rod "provided with a semi-spherical bearing fitting over the bearing 5" and thus does not teach "without the employment of an intervening bushing". In response, it should be noted that the examiner is not relying on Figure 1 but rather Figure 6, which clearly does not show any intervening bushing. McKone's Figure 6 clearly discloses "a piston pin and a connecting rod combination that provides for a shiftably matable engagement without the employment of an intervening bushing". Accordingly, the remaining arguments made against Figure 1 of McKone are moot.

Appellants then argue that Kochendorfer generally point to a genus group of metals suitable for use in his coating layer that includes numerous elements specifically,

coating including metals belonging within the third, fourth, fifth, or sixth groups in the periodic table of elements, and does not specifically teach use of Chromium". In response, the fact that Kochendorfer does not specifically describes all the metals belonging in the groups stated above does not obviate that Chromium, which is element 24 in the periodic table, is a metal which falls in the sixth group. One skilled in the art referencing the periodic table will see that Chromium is a metal in the sixth group.

Appellants further argue that the examiner has failed to provide a prima facie case of obviousness. The examiner disagrees since Kochendorfer et al. provide a clearly motivation for using a chromium-nitride as sliding bearing layer in a pin (see column 2, lines 45-50).

<u>Claims 10-12 and 17-19</u>

Appellants argue that "the combination of McKone and Kochendorfer et al. does not yield a piston pin and connecting rod combination that provides for a shiftably matable engagement without the employment of an intervening bushing". In response, the examiner directs the Board to the arguments presented to claims 8 and 15 since the examiner relies on Figure 6 and not Figure 1. Appellants further argue that the examiner has failed to point to any suggestion or motivation to coat the bearing of McKone or the gudgeon pins of Kochendorfer et al. with the chromium-nitride coating taught by Komuro. In response, it should be noted that Komuro et al. is not used to teach chromium-nitride coating since Kochendorfer et al teach this coating. Komuro et

al. is used to merely teach how one skilled in the art deposits chromium-nitride by vapor deposition.

Claims 13 and 20

Appellants argue that Fukutome et al. teach that the lower test piece, not the coated piece is buff-polished to yield a uniform roughness. The examiner has noted the argument and does not disagree; however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to buff both moving parts to reduce friction between the parts. Therefore, it would have been obvious to buff the moving parts so that it will create less friction as compared to none buffed surfaces, in particular, after depositing the chromium-nitride in both parts or in just one part.

Claims 14 and 21

Appellants argue that the combination of McKone in view of Kochendorfer, Komuro, and Fukutome fails to teach or imply the limitation in the claimed combination. The examiner directs the Board to review the examiner's arguments against claims 13, 14, 20, and 21 since there is no concrete argument as to why Wakefield does not render the claims obvious.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Ernesto Garcia

Ernesto Garcia

Conferees:

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TECHNOLOGY CENTER 3600

Attachment: one page showing the periodic table.

Periodic Table of the Elements

Atomic Number: 6
Symbol: C
Name: Carbon
Average Atomic Mass: 12.0107

Hydrogen
Semiconductors
(also known as metalloids)

Metals
Alkali metals
Alkaline-earth metals
Transition metals
Other metals

Nonmetals
Halogens
Noble gases
Other nonmetals

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9	Group 10	Group 11	Group 12	Group 13	Group 14	Group 15	Group 16	Group 17	Group 18
1	1 H Hydrogen 1.007 94																	2 He Helium 4.002 60
2	3 Li Lithium 6.941	4 Be Beryllium 9.012 182											5 B Boron 10.811	6 C Carbon 12.0107	7 N Nitrogen 14.0067	8 O Oxygen 15.9994	9 F Fluorine 18.998 4032	10 Ne Neon 20.1797
3	11 Na Sodium 22.989 769 28	12 Mg Magnesium 24.3050											13 Al Aluminum 26.981 5386	14 Si Silicon 28.0855	15 P Phosphorus 30.973 762	16 S Sulfur 32.065	17 Cl Chlorine 35.453	18 Ar Argon 39.948
4	19 K Potassium 39.0983	20 Ca Calcium 40.078	21 Sc Scandium 44.955 912	22 Ti Titanium 47.867	23 V Vanadium 50.9415	24 Cr Chromium 51.9961	25 Mn Manganese 54.938 045	26 Fe Iron 55.845	27 Co Cobalt 58.933 195	28 Ni Nickel 58.6934	29 Cu Copper 63.546	30 Zn Zinc 65.409	31 Ga Gallium 69.723	32 Ge Germanium 72.64	33 As Arsenic 74.921 60	34 Se Selenium 78.96	35 Br Bromine 79.904	36 Kr Krypton 83.798
5	37 Rb Rubidium 85.4678	38 Sr Strontium 87.62	39 Y Yttrium 88.905 85	40 Zr Zirconium 91.224	41 Nb Niobium 92.906 38	42 Mo Molybdenum 95.94	43 Tc Technetium (98)	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.905 50	46 Pd Palladium 106.42	47 Ag Silver 107.8682	48 Cd Cadmium 112.411	49 In Indium 114.818	50 Sn Tin 118.710	51 Sb Antimony 121.760	52 Te Tellurium 127.60	53 I Iodine 126.904 47	54 Xe Xenon 131.293
6	55 Cs Cesium 132.905 4519	56 Ba Barium 137.327	57 La Lanthanum 138.905 47	72 Hf Hafnium 178.49	73 Ta Tantalum 180.947 88	74 W Tungsten 183.84	75 Re Rhenium 186.207	76 Os Osmium 190.23	77 Ir Iridium 192.217	78 Pt Platinum 195.084	79 Au Gold 196.966 569	80 Hg Mercury 200.59	81 Tl Thallium 204.3833	82 Pb Lead 207.2	83 Bi Bismuth 208.980 40	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)
7	87 Fr Francium (223)	88 Ra Radium (226)	89 Ac Actinium (227)	104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (266)	107 Bh Bohrium (264)	108 Hs Hassium (277)	109 Mt Meitnerium (268)	110 Ds Darmstadtium (271)	111 Rg Roentgenium (272)	112 Uub* Ununbium (285)		114 Uuq* Ununquadium (289)		116 Uuh* Ununhexium (292)		

- The systematic names and symbols for elements greater than 111 will be used until the approval of trivial names by the IUPAC.

The discoveries of elements with atomic numbers 112, 114, and 116 have been reported but not fully confirmed.

58 Ce Cerium 140.116	59 Pr Praseodymium 140.907 65	60 Nd Neodymium 144.242	61 Pm Promethium (145)	62 Sm Samarium 150.36	63 Eu Europium 151.964	64 Gd Gadolinium 157.25	65 Tb Terbium 158.925 35	66 Dy Dysprosium 162.500	67 Ho Holmium 164.930 32	68 Er Erbium 167.259	69 Tm Thulium 168.934 21	70 Yb Ytterbium 173.04	71 Lu Lutetium 174.967
90 Th Thorium 232.038 06	91 Pa Protactinium 231.035 88	92 U Uranium 238.028 91	93 Np Neptunium (237)	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)	97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium (258)	102 No Nobelium (259)	103 Lr Lawrencium (262)

The atomic masses listed in this table reflect the precision of current measurements. (Each value listed in parentheses is the mass number of that radioactive element's most stable or most common isotope.)